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09/555,465	05/30/2000	ROBERT THOMAS OWEN REES	B-3942PCT-61	9371

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EXAMINER

ZHEN, LI B

ART UNIT	PAPER NUMBER
2126	

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/555,465	Applicant(s) REES ET AL.	
	Examiner Li B. Zhen	Art Unit 2126	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2004.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-35 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-5 and 7-35 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1 – 5 and 7 – 35 are pending in the current application.

Response to Arguments

2. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1 – 5, 7 – 14, 21 – 24, 29 – 31 and 33 – 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over “A Framework for Inter-ORB Request Level Bridge Construction” (hereinafter Steinder, cited in previous office action) in view of “Evaluating the Performance of Demultiplexing Strategies for Real-time CORBA” (hereinafter Gokhale).**

5. As to claim 1, Steinder teaches (*Mapping object references from IIOP domain*, p. 10) a gateway between a first network and a second network (mapping or bridging mechanism resides at the boundary between domains; p. 2, Section 2), the system comprising:

interface means (InterORB_Proxy uses standard CORBA interfaces) to receive from the first network a message (request from the client's ORB) intended for an object in the second (server's ORB) network (InterORB_Proxy uses standard CORBA interfaces to translate request from the client's ORB to the server's ORB; Section 5.1, p. 7), the message including an identifier (foreign object reference; Section 5.2, p. 8) for a further object (a foreign object; section 5.2, p. 8) in either the first or second network;

means (half-bridge) to generate further interface means (new half-bridge with InterORB_Proxy inside) for receiving from the second network messages for the further object (half-bridge must create a new half-bridge with InterORB_Proxy inside which encapsulates the reference);

means to replace the received identifier (replace IOR in the request) with the new identifier (reference specific for this domain) in the message (InterORB_Proxy object possesses a reference specific for this domain which replace IOR in the request); and

means to forward the message to the object in the second network (reference returned in LocateReply is a final reference to be used during a call).

Steinder also teaches (p. 9, Reference Translation; p. 10, *Mapping object references from IIOP domain*) means to form a new identifier (mapped from their proprietary form to an Interoperable Object Reference for IIOP) for the further interface means (InterORB_Proxy object possesses a reference specific for this domain which replace IOR in the request).

6. Steinder does not specify the new identifier including check data resulting from a hash operation for checking the validity of the or at least part of the new identifier.

However, Gokhale (pp. 4 – 5, Perfect Hashing) teaches an identifier (object key) including check data (hash function uses an automatically generated lookup table...to return a unique hash value for each object key) resulting from a hash operation (hash function) for checking the validity of the or at least part of the new identifier (perfect hash functions for object keys and operation names).

7. It would have been obvious to a person of ordinary skill in the art at the time of the invention to apply the teaching of including check data in an identifier as taught by Gokhale to the invention of Steinder because this provides a high-performance real-time ORB (see abstract of Gokhale).

8. As to claim 33, this is a method claim that corresponds to system 1; note the rejection to claim 1 above, which also meets this method claim.

9. As to claim 2, Steinder teaches (*Mapping object references from IIOP domain*, p. 10) the new identifier includes information to enable subsequent recovery by the system of the received identifier (InterORB_Proxy encapsulates the reference).

10. As to claim 3, Steinder teaches (Section 5.4, p. 9) the new identifier includes a representation of the received identifier (opaque reference form is encapsulated in the object_key field).

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11. As to claim 4, Steinder teaches (Section 5.4, p. 9) the new identifier includes an indication of the identity of the received identifier and the system includes means to associate said indication with said received identifier (fill out the ProfileBody structure...the opaque reference is encapsulated in the object_key field...host and port of this structure are assigned host name and port number of some IIOP domain object which is able to support this reference in the case of calling it).

12. As to claim 5, Steinder teaches (Section 5.4, p. 9) means to include in the new identifier a name tag (name and port number of some IIOP domain object) to identify the interface means (host and port of this structure are assigned host name and port number of some IIOP domain object which is able to support this reference in the case of calling it).

13. As to claim 7, Steinder as modified teaches the check data is a result of a hash operation enacted on at least part of the identifier and a secret (hash function uses an automatically generated lookup table...to return a unique hash value for each object key; pp. 4 – 5, Perfect Hashing of Gokhale).

14. As to claims 8 and 9, Steinder teaches (Section 5.4, p. 9) means to include in the new identifier an indication that the received identifier was received in a message from the first or second network (ProfileBody structure includes host and port).

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15. As to claim 10, Steinder teaches (Section 5.4, p. 9) form the new identifier (ProfileBody structure) on the basis of the determined origin (opaque reference is encapsulated in the object_key field).

16. As to claims 11 and 13, Steinder teaches (*Eager reference mapping to IIOP domain*, p. 10) if the received identifier originated in the first network, the means to form the new identifier forms a new identifier including information to enable subsequent recovery by the system of the received identifier (IOR including host name and port number is sent to the half-bridge on the server's side...recipient creates a half-bridge for server environment...a reference of the InterORB_Proxy inside the newly created half-bridge is sent to the server in the Request message).

17. As to claim 12, Steinder teaches (*Lazy reference mapping to IIOP domain*, p. 10) if the received identifier originated in the second network, having passed through the system from the second network to the first network (LocateReply will contain IOR which points to the InterORB_Proxy inside the created half-bridge), the means to form the new identifier forms a new identifier comprising an original identifier recovered from information included in the received identifier (a Bridge Factory is introduced in each cooperating environment...its host name and port number are used to fill the ProfileBody field of the IOR).

18. As to claim 14, Steinder teaches (Section 5.1, p. 7 – 8) comprising means to detect a name tag (char * PeerRef) in the message.

19. As to claim 21, Steinder teaches (Section 5.1, p. 7; *Determining Foreign Object Reference at connection establishment stage*, p. 10 – 11) the means to generate the further interface means comprises means to determine (finding the server object reference and creating its InterORB_Proxy) on the basis of the received identifier whether a template (the InterORB_Proxy is implemented as a template) for an appropriate further interface means is already known to the system.

20. As to claims 22 and 24, Steinder teaches (*Determining Foreign Object Reference at connection establishment stage*, p. 10 – 11) the means to generate the further interface means comprises means, which is operable in the event an appropriate template is not known to the system, to obtain an appropriate template from a remote repository (a search for foreign object references and creation of InterORB_Proxies for them is managed by a special trading protocol).

21. As to claim 23, Steinder teaches (Section 5.1, p. 7) the means to generate the further interface means comprises means, which is operable in the event no appropriate template is known to the system and/or an appropriate template is not recoverable from a remote repository, to obtain a generic template (InterORB_Proxy uses standard CORBA interfaces...new CORBA module will inherit from the old one).

22. As to claim 29, Steinder teaches (Section 5.4, p. 9) wherein the received identifier is an Interoperable Object Reference (Interoperable Object Reference) having the form IOR [host: port: key] (opaque reference is encapsulated in the object_key field...host and port of are assigned host name and port number).

23. As to claim 30, Steinder teaches (Section 5.4, p. 9) the new identifier (ProfileBody structure) is an Interoperable Object Reference (Interoperable Object Reference) having the form IOR[host x: port x: key x] (object_key field...host and port), wherein key x includes information to enable subsequent recovery by the system of the received identifier (opaque reference is encapsulated in the object_key field).

24. ^{claim} As to ³¹31, Steinder teaches (Section 5.4, p. 9) wherein key x includes a representation of the received object reference IOR[host i: port i: key i] (opaque reference is encapsulated in the object_key field).

25. As to claims 34 and 35, Steinder teaches the further interface means (InterORB_Proxy) corresponds to the further object (foreign object) and the further interfaces means is generated only when or after the message including the identifier for the further object is received (when a foreign object reference appears inside a half-bridge this new object adapter has to enable creation of dynamic object — an

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InterORB_Proxy to encapsulate it if such an encapsulating InterORB_Proxy does not yet exist, giving it an appropriate reference; p. 8, Section 5.2).

26. Claims 15 – 20, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinder and Gokhale in view of “ORB 2.0 RFP Submission” (hereinafter IONA, cited in previous office action).

27. As to claims 15, 17 and 18, Steinder as modified does not teach determining if an object is valid and available to receive messages.

However, IONA teaches (p. 29) checking validity of an identifier (most ORBs provide the ability to determine if an object reference is still valid) determine whether the object in the second network is valid and is still available to receive messages (gatewayed objects that have not been used in a long time could be checked to see if they no longer exist).

28. It would have been obvious to a person of ordinarily skilled in the art at the time of the invention to apply the teaching of checking validity of an identifier as taught by IONA to the invention of Steinder as modified because gatewayed objects that have not been used in a long time could be checked to see if they no longer exist and, if they have been deleted, the proxy may also be deleted (p. 29 of IONA).

29. As to claim 16, Steinder as modified teaches (Section 4.5.1, p. 25 of IONA) a naming service (name services) and the presence or absence of a name tag being

indicative of whether the object associated with the name tag is available or not (gatewayed objects that have not been used in a long time could be checked to see if they no longer exist and if they have been deleted, the proxy may also be deleted).

30. As to claim 32, Steinder teaches (Section 5.1, p. 7 – 8; Section 5.4, p. 9) key x includes: an identifier to indicate from which network the object reference originated (opaque reference is encapsulated in the object_key field) and a name tag (char * PeerRef) associated with an identity of the gateway process. As to check data for verifying the validity of the object reference, see the rejection to claim 1 above.

31. As to claim 19, see the rejection to claim 7 above.

32. As to claim 20, Steinder as modified teaches the secret is stored by and only accessible by the gateway (hash function uses an automatically generated lookup table...to return a unique hash value for each object key; pp. 4 – 5, Perfect Hashing of Gokhale).

33. **Claims 25 – 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinder and Gokhale in view of U.S. Patent No. 5,991,877 to Luckenbaugh (cited in previous office action).**

34. As to claim 25, Steinder as modified does not teach a trusted operating system.

However, Luckenbaugh teaches (column 4, line 57 – column 5, line 5; column 10, lines 10 – 40) teaches a trusted operating system (access control system includes a trusted framework).

35. It would have been obvious to a person of ordinarily skilled in the art to apply the teaching of a trusted operating system as taught by Luckenbaugh to the invention of Steinder as modified because this provides fine-grained security access authorizations (column 2, lines 39 – 55 of Luckenbaugh).

36. As to claim 26, Steinder as modified teaches (column 8, lines 20 – 50; column 9, lines 23 – 31; column 10, lines 30 – 40 of Luckenbaugh) the trusted operating system enforces Mandatory Access Control (MAC and role-based policies).

37. As to claim 27, Steinder as modified teaches (column 6, line 42 – column 7, line 30; column 8, lines 1 – 48 Luckenbaugh) comprising at least two logical compartments (client 301 and server 302, Fig. 3) and a trusted relay process (AuthClient class 140, Fig. 3) that has privileges necessary to pass messages between the two compartments, wherein the first network and the respective interface means are associated with a first compartment and the second network is associated with a second compartment (policy manager of 310a of the client 301 must issue the appropriate call through an AuthClient object 140 to invoke an appropriate return by the interaction of an authenticator object 130 and the policy manager 310b of the server 302, Fig. 3).

38. As to claim 28, Steinder as modified teaches (column 8, lines 20 – 50 of Luckenbaugh) wherein a secret (name and password), usable by the system in a hash operation for validating object references (authentication protocol between the client and server), is associated with a third compartment (Authenticator 130, Fig. 3), and wherein only the trusted relay process has the privileges necessary to retrieve the secret from the further compartment in order to enact a hash operation (instances of the AuthClient class 140 contains objects which preferably provide an interface... to collect information concerning the client which are needed for particular authorization policies...any number of additional interfaces to accommodate other existing or custom authorization protocols can be provided).

Conclusion

39. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See USPTO form 892.

40. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li B. Zhen whose telephone number is (571) 272-3768. The examiner can normally be reached on Mon - Fri, 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Li B. Zhen
Examiner
Art Unit 2126

lbz
September 18, 2004


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